

## D0297 NP

Fig. 1A

|     |   |      |
|-----|---|------|
| 1   | CACTCACACACCTACGGACACACGCTACTCTGGGAGGTGATTTGCGACTTAGCCAGGCC   | 60   |
| 61  | CCAAAGCTGGGCTCCTGTAGGGAGAAAGTCTGCCCAGGTCCACATCCAAGCCTTCATCGT  | 120  |
| 121 | TTGTCCTCCGGGTTCTGGGATCCTGCTGGAAGAGGGGAGCTTCTGCAATGGGAGTTGCCA  | 180  |
| 1   | M G V A T   | 5    |
| 181 | CAACCCTGCAGCCCCCAACCACTTCCAAAACCTTGCAAGCAGCATCTAGAAGCAGTGG    | 240  |
| 6   | T L Q P P T T S K T L Q K Q H L E A V G                       | 25   |
| 241 | GCGCCTACCAATATGTGCTCACTTTCCTCTTCATGGGCCCTTTCTTCTCCCTTCTTGCTCT | 300  |
| 26  | A Y Q Y V L T F L F M G P F F S L L V F                       | 45   |
| 301 | TTGTCCTCCTCTTCACGTCACTCTGGCCCTTCTCTGTTTTTTACTTGGTGTGGCTCTATG  | 360  |
| 46  | V L L F T S L W P F S V F Y L V W L Y V                       | 65   |
| 361 | TGGACTGGGACACACCCAACCAAGGTGGAAGGCGTTTCGGAGTGGATAAGGAACCGGGCAA | 420  |
| 66  | D W D T P N Q G G R R S E W I R N R A I                       | 85   |
| 421 | TTTGGAGACAACTAAGGGATTATTATCCTGTCAAGCTGGTGAAAACAGCAGAGCTGCCCC  | 480  |
| 86  | W R Q L R D Y Y P V K L V K T A E L P P                       | 105  |
| 481 | CGGATCGGAACCTACGTGCTGGGCGCCACCCTCATGGGATCATGTGTACAGGCTTCCTCT  | 540  |
| 106 | D R N Y V L G A H P H G I M C T G F L C                       | 125  |
| 541 | GTAATTTCTCCACCGAGAGCAATGGCTTCTCCAGCTCTTCCCGGGGCTCCGGCCCTGGT   | 600  |
| 126 | N F S T E S N G F S Q L F P G L R P W L                       | 145  |
| 601 | TAGCCGTGCTGGCTGGCCTCTTCTACCTCCCGGTCTATCGCGACTACATCATGTCCTTTG  | 660  |
| 146 | A V L A G L F Y L P V Y R D Y I M S F G                       | 165  |
| 661 | GACTCTGTCCGGTGAGCCGCCAGAGCCTGGACTTCATCCTGTCCAGCCCCAGCTCGGGC   | 720  |
| 166 | L C P V S R Q S L D F I L S Q P Q L G Q                       | 185  |
| 721 | AGGCCGTGGTCATCATGGTGGGGGGTGCGCACGAGGCCCTGTATTCAGTCCCCGGGGAGC  | 780  |
| 186 | A V V I M V G G A H E A L Y S V P G E H                       | 205  |
| 781 | ACTGCCTTACGCTCCAGAAGCGCAAAGGCTTCGTGCGCCTGGCGCTGAGGCACGGGGCGT  | 840  |
| 206 | C L T L Q K R K G F V R L A L R H G A S                       | 225  |
| 841 | CCCTGGTGCCCGTGTA CTCTTTGGGGAGAAATGACATCTTTAGACTTAAGGCTTTTGCCA | 900  |
| 226 | L V P V Y S F G E N D I F R L K A F A T                       | 245  |
| 901 | CAGGCTCCTGGCAGCATTTGGTGCCAGCTCACCTTCAAGAAGCTCATGGGCTTCTCTCCTT | 960  |
| 246 | G S W Q H W C Q L T F K K L M G F S P C                       | 265  |
| 961 | GCATCTTCTGGGGTCGCGGTCTCTTCTCAGCCACCTCCTGGGGCCTGCTGCCCTTTGCTG  | 1020 |
| 266 | I F W G R G L F S A T S W G L L P F A V                       | 285  |

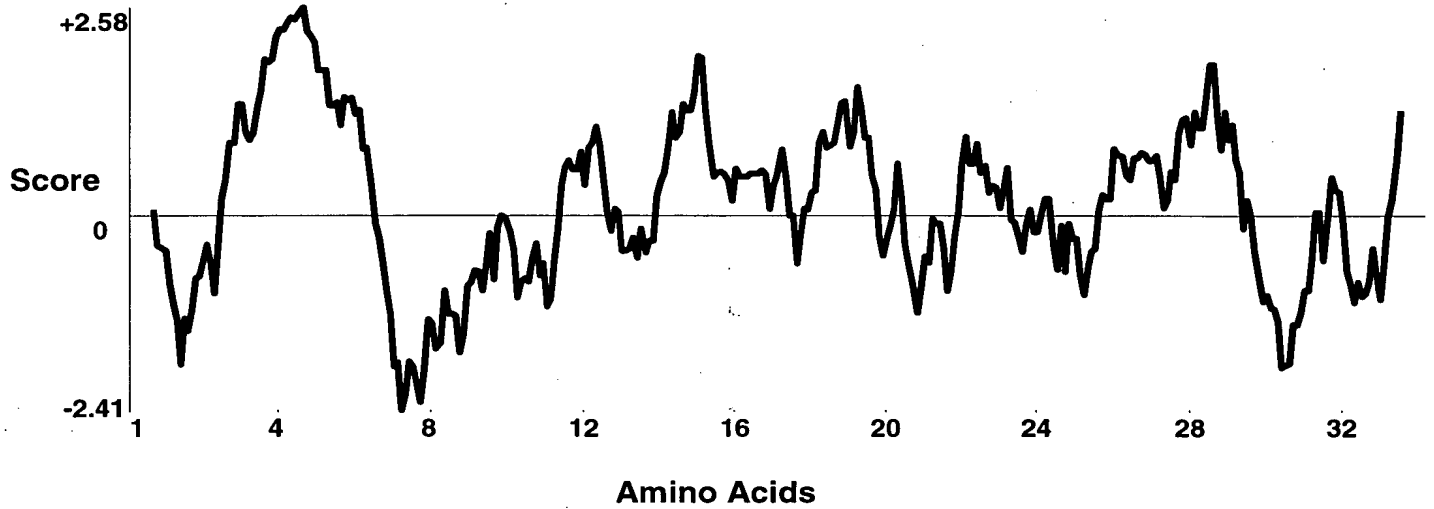
Fig. 1B

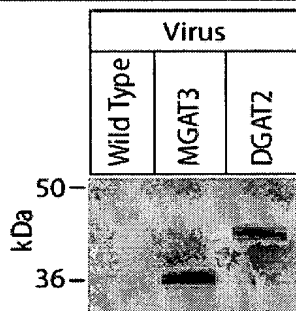
|      |  |      |
|------|--|------|
| 1021 | TGCCCATCACCCTGTGGTGGGCGCGCCCATCCCCGTCCCCAGCGCCTCCACCCACCG    | 1080 |
| 286  | P I T T V V G R P I P V P Q R L H P T E                      | 305  |
| 1081 | AGGAGGAAGTCAATCACTATCACGCCCTCTACATGACGGCCCTGGAGCAGCTCTTCGAGG | 1140 |
| 306  | E E V N H Y H A L Y M T A L E Q L F E E                      | 325  |
| 1141 | AGCACAAGGAAAGCTGTGGGGTCCCCGCTTCCACCTGCCTCACCTTCATCTAGGCCTGGC | 1200 |
| 326  | H K E S C G V P A S T C L T F I                              | 341  |
| 1201 | CGCGGCCTTTTCGCTGAGCCCTGAGCCCAAGGCACTGAGACCTCCACCCACTGTGGACTC | 1260 |
| 1261 | CATGCCTCCAATAAAAGGTAGTTCTGGGCCAGCGCAGTGCCTCGTGCCTGTGATCCCAG  | 1320 |
| 1321 | CACCTTGGGAGGCCAGGGTGGGAGGATCGTTTGAGCCCAGGAGTTGAAGACCAGCCTGGG | 1380 |
| 1381 | CAACACAGTGAGACTTCATTCTACAAAAAAAAAAAAAAAAA                    | 1420 |

**Fig.2: Alignment of Predicted Human  
MGAT3 with its Homologues**

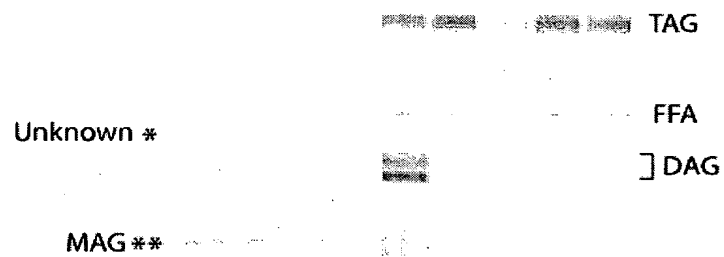
|       |       |     |  |     |
|-------|-------|-----|--|-----|
| MGAT3 | (1)   | 1   | -----  | 50  |
| MGAT1 | (1)   |     | -----  | MGV |
| DGAT2 | (1)   |     | MKTLIAAYSGVLRGERQAEADRSQRSHGGPALSREGSGRWGTGSSILSAL   |     |
| MGAT3 | (4)   | 51  | ATTLPPTTSKTLQKQH LEAVGAYQYVLTFLFMGPFFSLLVFVLLFTSLW   | 100 |
| MGAT1 | (1)   |     | -MKVEFAPLN-IQLARR LQTVAVLQWVLSFLTGPMSIGITVMLTIHN-YL  |     |
| DGAT2 | (51)  |     | QDLFSVTWLNRSKVEKQLQVISVLQWVLSFLVLGVACSAILMYIFCTDCW   |     |
| MGAT3 | (54)  | 101 | PFSVFLVWLYVDWDTFNQGGRRSEWIRNRAIWRQLRDYYPVKLVKTAE L   | 150 |
| MGAT1 | (48)  |     | FLYIPYELMWLYFDWHTPERGGRRSSWIKNWTWKHEKDYFPPIHLIKTQDL  |     |
| DGAT2 | (101) |     | LIAVLYFTWLVFDWNTPKKGGRRSQVVRNWAVWRYFRDYFPPIQLVKT HNL |     |
| MGAT3 | (104) | 151 | PPDRNVVLCAHPHGIMCTGFLCNFSTESNGFSQLFPGLRPWLAVLAGLFY   | 200 |
| MGAT1 | (98)  |     | DPSHNYIFGFHPHGIMAVGAFGNFSVNYSDEKDLFPGFTSYLHVLP LWF   |     |
| DGAT2 | (151) |     | LTTRNYIFGYHPHGIMGLCAFCNFS TEATEVSKKFPGIRPYLATLAGNFR  |     |
| MGAT3 | (154) | 201 | LPVYRDYIMSFGLCPVSRQSLDFILSQPOLQOAVVIMVGGAEALYSVPG    | 250 |
| MGAT1 | (148) |     | CPVFREYVMSVGLVSVSKKSVSYMVSKEGCGNISVIVLGGAKESLDAHPG   |     |
| DGAT2 | (201) |     | MPVLREYLMSGGICPVSRDTIDYLLSKNGSGNAIIIVVGGAEBSLSSMPG   |     |
| MGAT3 | (204) | 251 | EHCLTLQKRKGFVRLALRHGASLVPVVSFGENDIFRLKAFATGSWOHW CQ  | 300 |
| MGAT1 | (198) |     | KFTLFIRQRKGFVKIALTHGASLVPVVSFGENELFKQTDNPEGSWIRT VQ  |     |
| DGAT2 | (251) |     | KNAVTLERNRKGFVKLALRHGADLVPIYSFGENEVYKOVIFEEGSWGRW VQ |     |
| MGAT3 | (254) | 301 | LTFKKLMGFSPCIFWGRGLFSATSWGLLPFAVPITTVVGRPIVPQR LHP   | 350 |
| MGAT1 | (248) |     | NKLQKIMGFALPLFHARGVFOYN-FGLMTYRKATHTVVGRPIPVROT LNP  |     |
| DGAT2 | (301) |     | KKFQKYIGFAPCIFHGRGLFSSTWGLVPYSKPITTVVGEPIITIPKLEHP   |     |
| MGAT3 | (304) | 351 | TEEEVNHVHALYMTALEQLFEHHEKESCGVPASTCLTFI              | 388 |
| MGAT1 | (297) |     | TOEQTEELHOTYMEELRKLFEHHEKGYGIPHEHETLV LK             |     |
| DGAT2 | (351) |     | TQDDIDLYHTMYMEALVKLEDKHKTKFGLPETEVLEV N              |     |

**Fig.3 Hydrophobicity Analysis of  
MGAT3**

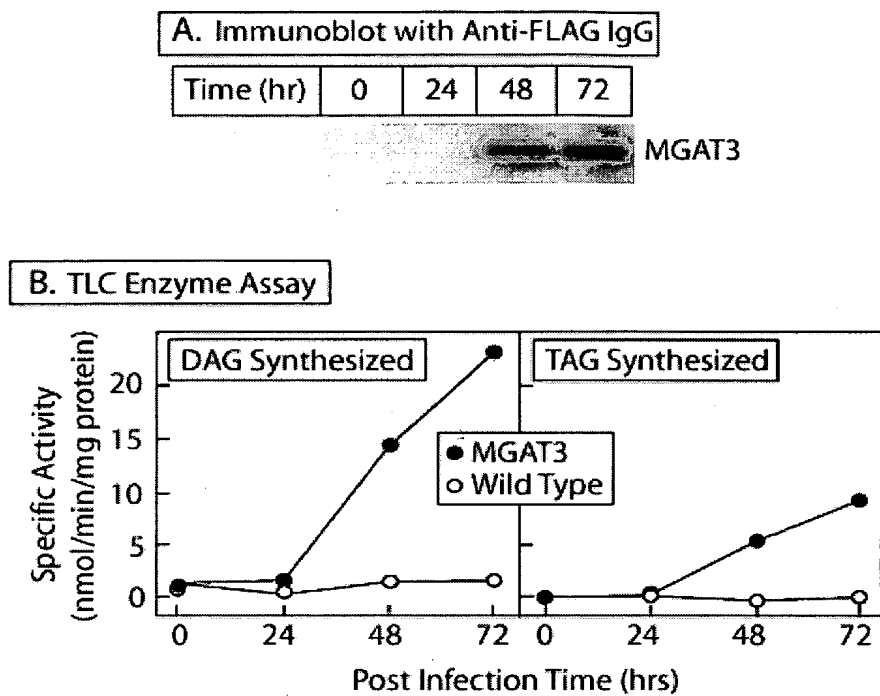


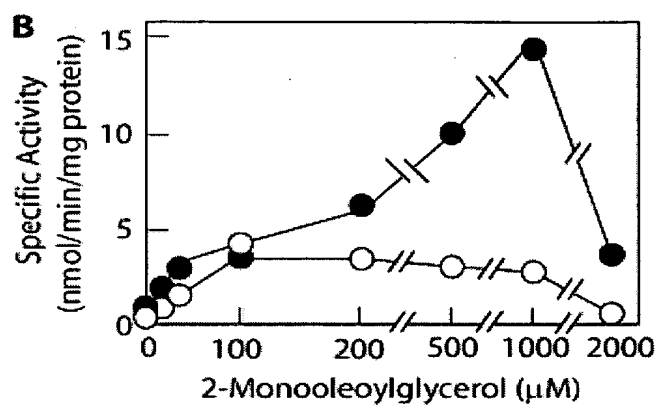
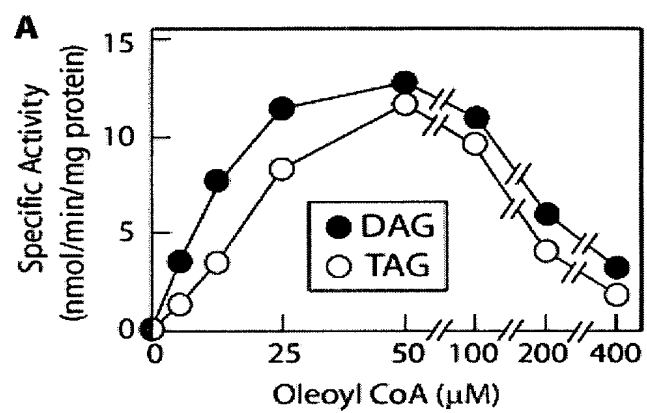
**Fig. 4 Expression of Recombinant MGAT3****A. Immunoblot with Anti-FLAG IgG****B. TLC MGAT Enzyme Assay**

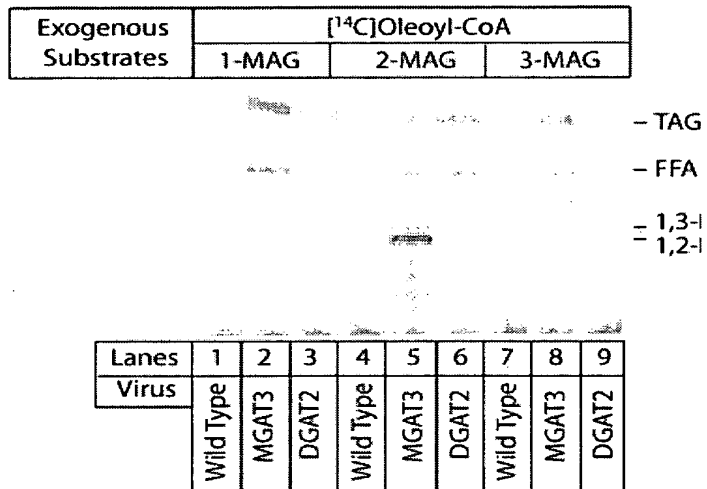
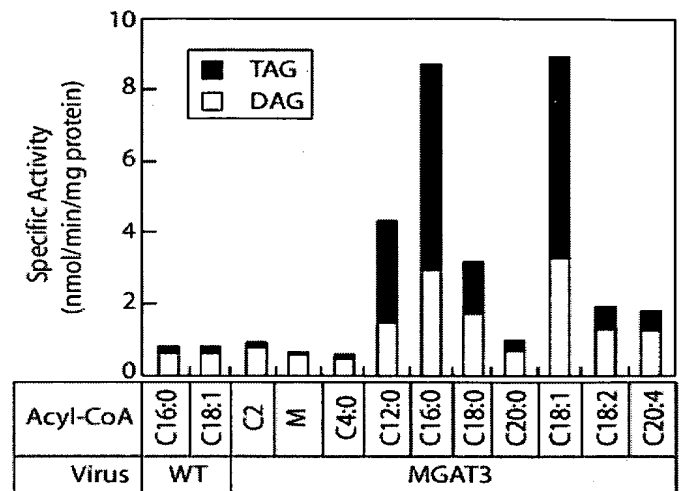
| Exogenous Substrates | [ <sup>14</sup> C]Oleoyl-CoA |       |     |
|----------------------|------------------------------|-------|-----|
|                      | None                         | 2-MAG | DAG |



| Lanes | 1         | 2     | 3     | 4         | 5     | 6     | 7         | 8     | 9     |
|-------|-----------|-------|-------|-----------|-------|-------|-----------|-------|-------|
| Virus | Wild Type | MGAT3 | DGAT2 | Wild Type | MGAT3 | DGAT2 | Wild Type | MGAT3 | DGAT2 |

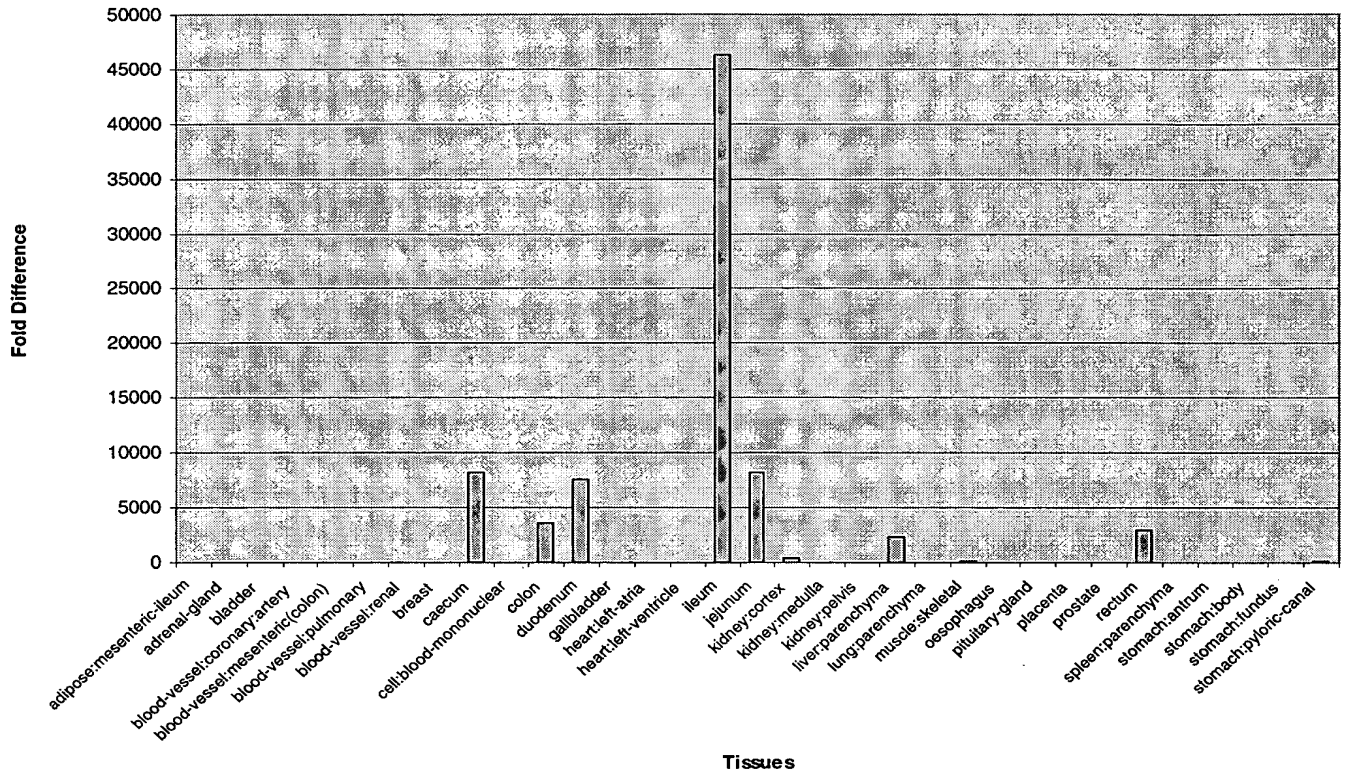
**Fig.5 Time Course of Expression**

**Fig.6 Substrate Concentration Curve**

**Fig.7 Substrate Specificity****A Monoacylglycerol Specificity****B Acyl CoA Specificity**



**Fig.8 Relative Expression of MGAT3 in Normal Tissues**



**Fig.9 Relative expression of MGAT3 in Crohn's  
and control Ileum**

